PB89-196745

Superfund Record of Decision (EPA Region 3): Dorney Road Landfill Superfund Site, Lehigh County, Pennsylvania (First Remedial Action), September 1988

(U.S.) Environmental Protection Agency, Washington, DC

29 Sep 88

U.S. Department of Commerce
National Technical Information Service

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Agency

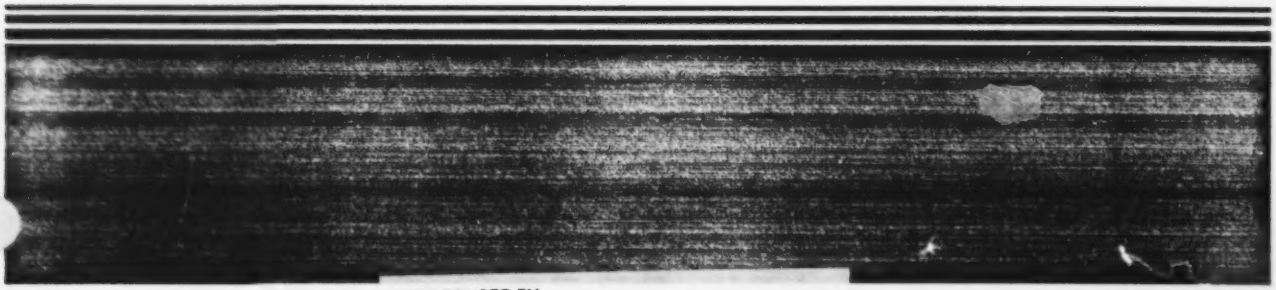
Office of
Emergency and
Remedial Response

EPA/ROD/R03-88/058
September 1988

EPA

Superfund Record of Decision:

Dorney Road, PA



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15. Supplementary Notes

16. Abstract (Limit: 200 words)

The Dorney Road Landfill site is located in Lehigh County, Pennsylvania. The site is approximately 27 acres, bounded on the east by Dorney Road, and extends westward such that the southwest corner is in Longswamp Township, Berks County. Land use in the area is rural, residential and agricultural. The population within an 0.25 mile radius of the site is estimated to be approximately 20 people. Currently, 1 residence is located within 1,000 feet of the site and 3 residences are within 2,000 feet of the site. The water supply for these nearby homes is ground water from private wells. The majority of the site is presently owned by R. Emory Mabry. Beginning in 1952, an abandoned iron mine pit on the site was used as an open dump. From 1966 to 1978, an unpermitted landfill was operated in the same mine pit. In 1986, EPA conducted a removal action and regraded the landfill to prevent runoff and erosion of landfill material from migrating to neighboring property. In 1980 and 1982, EPA investigations revealed elevated levels of VOCs, metals and phenols in ground water and leachate samples. This remedial action will prevent dermal contact and incidental ingestion of landfill soil and solid waste. It will also minimize the continued leaching of precipitation and onsite ponded waters through the contaminated landfill. A subsequent remedial action will address the ground water under the site. The primary contaminants of concern affecting the soil, ground

(See Attached Sheet)

cont'd on back

17. Document Analysis a. Descriptors

Record of Decision
Dorney Road Landfill, PA
First Remedial Action
Contaminated Media: gw, sw, soil
Key Contaminants: metals (arsenic, chromium), organics (PAHs, phenol), VOCs (benzene, toluene, xylenes)

b. Identifiers/Open-Ended Terms

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report) None	21. No. of Pages 57
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EPA/ROD/R03-88/056
Dorney Road Landfill, PA
First Remedial Action

16. ABSTRACT (continued)

water and surface water are VOCs including benzene, toluene and xylenes, metals including arsenic and chromium, and other organics including phenol and PAHs.

The selected remedial action for this site includes: offsite disposal of approximately 700,000 gallons of onsite pond water; construction of a dike and diversion ditch system to control runon/runoff; regrading and installation of a multi-layer landfill cap and a gas collection system; ground water monitoring; and deed and access restrictions. The estimated present worth cost for this remedial action is $14,000,000 with estimated annual O&M costs of $42,000.

DECLARATION FOR THE RECORD OF DECISION

Site Name and Location

Dorney Road Landfill Superfund Site
Upper Macungie Township, Lehigh County, Pennsylvania
Landfill Waste and Soil Operable Unit

Statement of Purpose

This decision document represents the selected remedial action for this site developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and to the extent practicable, the National Contingency Plan (NCP).

Statement of Basis

This decision is based upon the administrative record (index attached). The attached index identifies the items which comprise the administrative record upon which the selection of a remedial action is based.

The Commonwealth of Pennsylvania concurs with the selected remedy. A copy of the concurrence letter is attached.

Description of the Selected Remedy

This initial operable unit was developed to protect public health and the environment by preventing dermal contact and incidental ingestion of landfill soil and solid waste. It will also minimize the continued leaching of precipitation and on-site ponded waters through the contaminated landfill media, thereby isolating the source of ground water contamination. A subsequent operable unit addressing the ground water under the site is forthcoming.

The selected site remedy is protective of human health and the environment, will attain the applicable or relevant and appropriate requirements of other Federal and State environmental laws, and is cost-effective.

The major components of the selected remedy are as follows:

* Elimination of On-site Ponded Waters
* Regrading
* Pennsylvania-Type Multi-Layer Cap
* Runon/Runoff Controls
* Runoff Monitoring
* Ground Water Monitoring
* Perimeter Fence
* Deed Notice

Declaration

The selected remedy is protective of human health and the environment, attains Federal and State requirements that are applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable for this site. Because treatment of the principal threats of the site was not found to be practicable or within the limited scope of this action, this remedy does not satisfy the statutory preference for treatment as a principal element of the remedy.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted within five years after commencement of remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

9-29-88
Date

Stanley L. Laskowski
Acting Regional Administrator
Region III

Site Description and Summary of
Remedial Alternative Selection for the
Dorney Road Landfill Site
- Landfill Waste and Soil Operable Unit-

Introduction

The Superfund investigation of the Dorney Road Landfill, also known as Oswalds Landfill, focuses on two problem areas: first, dermal contact and incidental ingestion of landfill soil and solid waste which contains numerous semi-volatile/volatile organic compounds and inorganic contaminants; and second, the ingestion, inhalation and dermal contact of ground water, which has become contaminated with many of the same chemical contaminants.

The investigation and the selected remedy for the landfill proper is the subject that will be discussed herein. This Record of Decision (ROD) will summarize the results of a Superfund Remedial Investigation/ Feasibility Study (RI/FS) that focused on the contamination at the Dorney Road Landfill site and will present the chosen remedial action for the landfill. The remaining problem area (i.e., ground water) is being studied extensively at this time and will be addressed in a subsequent FS and Record of Decision (ROD).

Site Location and Description

The Dorney Road Landfill Site is located along the southwest boundary of Upper Macungie Township in Lehigh County, Pennsylvania, approximately eight miles southwest of Allentown. The site is located on the United States Geological Survey (USGS) 7.5 minute topographic map, Topton, Pennsylvania Quadrangle. The site lies one mile southwest of Breinigsville and 1.4 miles north-northwest of Mertztown. The site location is shown on Figure 1. The site is composed of approximately 27 acres which is bounded to the east by Dorney Road and extends westward such that the southwest corner of the site is in Longswamp Township, Berks County.

Most of the Dorney Road site consists of an abandoned landfill surrounded by a soil berm. Prior to 1966, the site was an open dump with waste disposed in an abandoned iron mine pit. From 1966 to 1978 an unpermitted landfill was operated in the same abandoned mine pit. Due to the nature of wastes present at the Dorney Road Landfill, vegetation is sparse within several areas of the landfill. Sparse vegetation growth can also be attributed to a June 1986 EPA Removal Action, when the landfill was regraded to prevent runoff and erosion of landfill material from migrating to neighboring agricultural lands. Several ponds remained on site following the June 1986 EPA surface regrading effort. Discharge from the southern most on-site pond is directed to the southeast corner of the site and then off-site to the south via a riprap channel. Ground surface elevations range from approximately 430 feet above mean sea level (MSL) to 470 ft. MSL. The general layout of the site and surrounding area is shown on Figure 2.

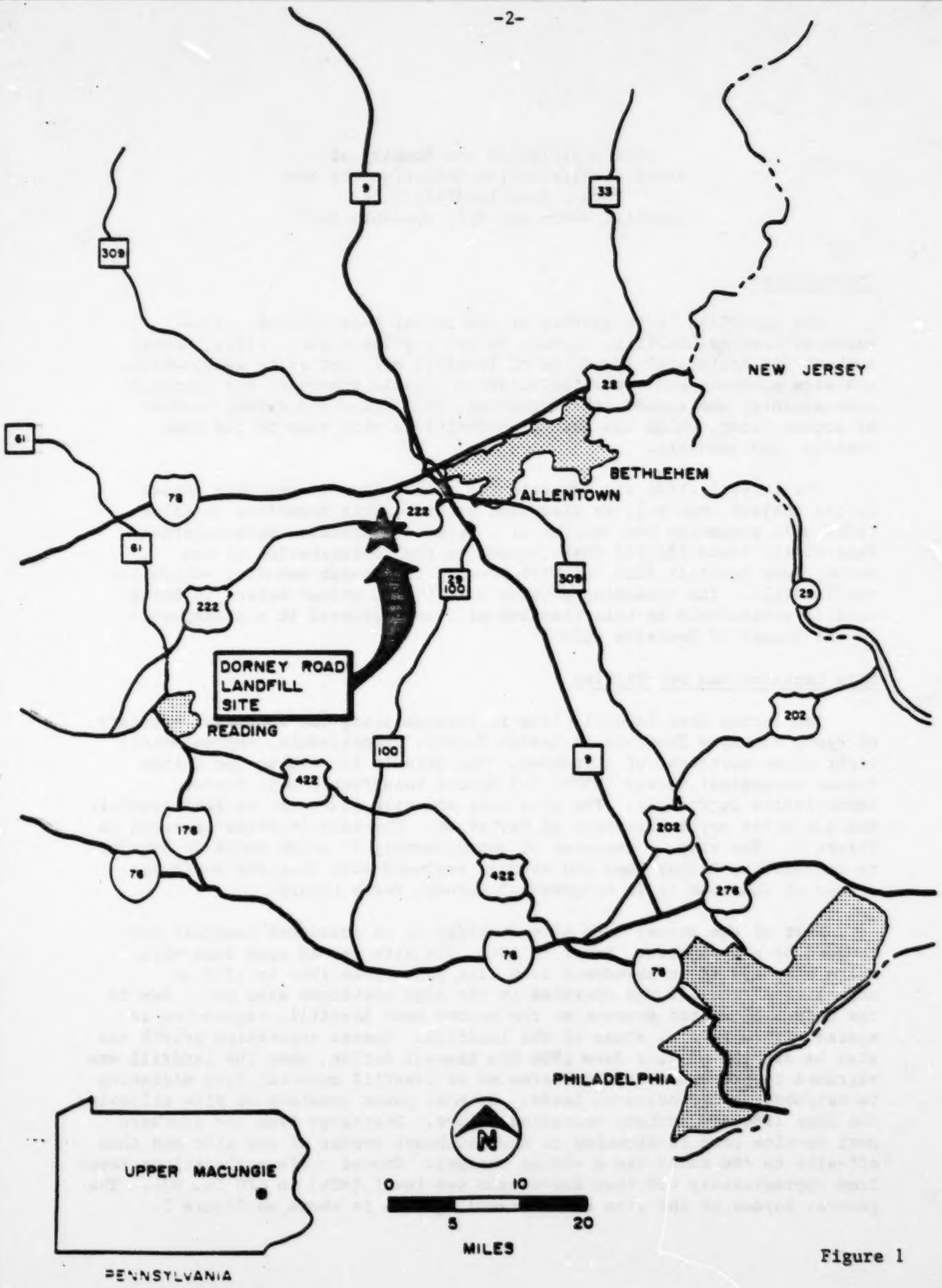
NEW JERSEY
BETHLEHEM
ALLENTOWN
DORNEY ROAD
LANDFILL
SITE
READING
PHILADELPHIA
UPPER MACUNGIE
PENNSYLVANIA
N
0
10
5
20
MILES

Figure 1

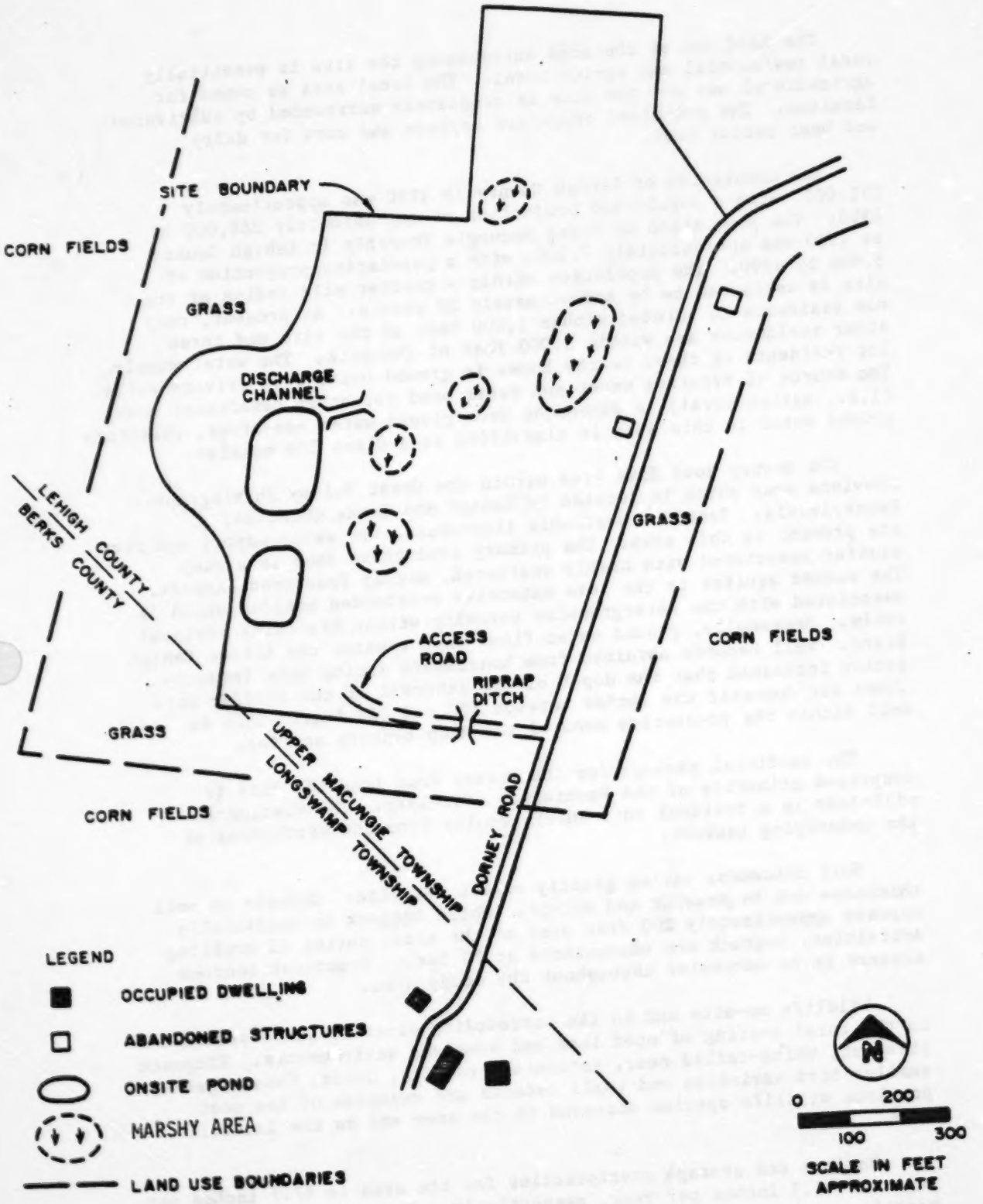
SITE BOUNDARY
CORN FIELDS
GRASS
DISCHARGE CHANNEL
LEHIGH COUNTY
BERKS COUNTY
GRASS
CORN FIELDS
ACCESS ROAD
RIPRAP DITCH
GRASS
UPPER MACUNGIE TOWNSHIP
LONGSWAMP TOWNSHIP
DORNEY ROAD
CORN FIELDS
LEGEND
OCCUPIED DWELLING
ABANDONED STRUCTURES
ONSITE POND
MARSHY AREA
LAND USE BOUNDARIES
N
0
200
100
300
SCALE IN FEET
APPROXIMATE

Figure 2

The land use of the area surrounding the site is essentially rural residential and agricultural. The local area is zoned for agricultural use and the site is completely surrounded by cultivated farmland. The principal crops are soybean and corn for dairy and beef cattle feed.

The population of Lehigh County in 1980 was approximately 272,000, with a population projection of approximately 288,000 by 1990. The population of Upper Macungie Township in Lehigh County in 1980 was approximately 7,500, with a population projection of 8,800 by 1990. The population within a quarter mile radius of the site is estimated to be approximately 20 people. At present, only one residence is located within 1,000 feet of the site and three other residences are within 2,000 feet of the site. The water supply for residents of these nearby homes is ground water from private wells. The source of drinking water and water used for other beneficial uses (i.e., agricultural) is dependent upon ground water resources, therefore ground water in this area is classified as a Class IIA aquifer.

The Dorney Road Site lies within the Great Valley Physiographic Province area which is located in Lehigh and Berks Counties, Pennsylvania. Based on available literature, two water supply aquifers are present in this area. The primary productive zone is a deep aquifer associated with highly weathered, highly fractured bedrock. The second aquifer is the less extensive overburden aquifer which is associated with the intergranular porosity within the thick residual soils. Regionally, ground water flows east towards the Little Lehigh River. Well records obtained from homeowners during this investigation indicated that the depth of the interval of the aquifer utilized for domestic use varies between 100 and 200 feet. This is well within the productive zone of the deep bedrock aquifer.

The surficial geology for the Dorney Road Landfill Site is comprised primarily of the Washington silt-loam. The Washington silt-loam is a residual soil which results from the weathering of the underlying bedrock.

Soil thickness varies greatly across the site. Changes in soil thickness can be drastic and abrupt. While bedrock is surficially exposed approximately 200 feet west of the site, during RI drilling activities, bedrock was encountered at 70 feet. Fractured bedrock appears to be extensive throughout the study area.

Wildlife on-site and in the surrounding areas is quite varied due to the rural setting of open land and woodland environments. Ringneck pheasant, white-tailed deer, cottontail rabbits, ducks, Canada geese, smaller bird varieties and small rodents are examples of the most populous wildlife species observed in the area and on the landfill site.

Maximum and average precipitation for the area is 67.7 inches per year and 42.9 inches per year, respectively. The period of maximum monthly precipitation was August, 1955 with 12.10 inches and the period of minimum monthly precipitation occurred in May of 1964 with 0.09 inches.

The station of record is the Allentown - Bethlehem - Easton Airport, approximately eight miles to the northeast, which has a historical record length of 50 years. Approximately 60% of the average annual precipitation of 42.9 inches per year is lost to evapotranspiration and 40% is available for surface water runoff and ground water recharge. Prevailing winds are from the west-northwest.

Site History

The majority of the site is currently owned by R. Emory Mabry of Mertztown, Pennsylvania. A portion of the westernmost protrusion formerly owned by the Mertz Estate is currently owned by Robert Tercha. Beginning in 1952, an abandoned iron mine pit was used as an open dump by Mr. Mabry. Prior to 1966, Harold E. Oswald began operating a landfill at the site in the same mine pit. In a letter dated January 8, 1970, the Pennsylvania State Health Center notified Mr. Oswald that the operations of the site as a landfill constituted a public health threat and required him to compact the fill and apply cover to the site. A follow-up letter on March 9, 1970, indicated that Mr. Oswald had not complied with this directive.

Mr. Oswald initiated a permit application for operation of the landfill, but that permit was never completed by Mr Oswald nor approved by the Pennsylvania Department of Environmental Resources (PADER). Although the application was never approved, landfill operations continued until December 30, 1978. Proper landfill closure procedures as required by PADER regulations (i.e. grading, reseeding) were never implemented at the Dorney Road site.

On September 28, 1979, Mr. Edward Reeser of Whitehall, PA., applied for a landfill permit to renew disposal operations at the site. However, the permit was not granted by PADER.

On May 21, 1980, approximately two years after the landfill ceased operations, EPA performed a Preliminary Assessment of the site. Ground water and leachate samples were taken. Organic contaminants detected in the samples included petroleum hydrocarbons halogenated hydrocarbons. Inorganic contaminants detected include arsenic, cadmium, chromium and lead.

On December 8, 1982, PADER representatives collected water and ground water samples at the site. High levels of lead and phenol were detected in the surface water and ground water, respectively.

As a result of previous site history and a site inspection performed during the winter/spring of 1983, the Dorney Road Landfill was proposed for the National Priorities List (NPL) in September of 1983 and promulgated a year later (September 1984).

Since the site was not properly graded or reseeded upon the completion of landfill operations, no surface drainage control existed during periods of precipitation. Ponding of rainwater over the landfill area occurred which resulted in the formation of gullies due to subsequent erosion. Chronic off-site surface drainage to the south of the landfill was observed during rainy seasons. Corn plants in this area have shown signs of stress (i.e., yellow, withering).

Responding to a May 1986 removal request by PADER for the Dorney Road site, the Environmental Response Cleanup Service (ERCS), an EPA contractor, covered leachate breaks, regraded and seeded the site, and installed earthen berms to control surface leachate migration. In addition, obvious areas of access were fenced.

Current Site Status

A Remedial Investigation (RI) was performed at the Dorney Road Landfill site from the Fall of 1987 through the Spring of 1988. The RI consisted of several activities: surface investigation, geological characterization and hydrogeological study. Data from these activities were used as the basis for assessing the nature and extent of site-related contamination and associated risks to the public health and the environment.

Soils

On-site surficial soil samples were collected at 100-foot intervals along established survey lines. Off-site surficial soil samples were collected at 100-foot intervals along a line 50 feet from the site boundary on the north, west and south, and at 200-foot intervals along a line 100 feet from the west and south edges of the site. One background surface soil sample was collected approximately 900 feet west of the site. In addition, five on-site samples were collected at locations identified as potentially being contaminated. These locations included areas of broken batteries and leachate seeps. The soil samples collected were field screened for the presence of Volatile Organic Compounds (VOCs) using a photoionization detector. Screened samples were analyzed for volatile/semi-volatile organic compounds and inorganic chemical parameters. Contaminants identified in subsurface soils and their maximum concentrations encountered are listed in Table 1. Contaminants listed are only those which were selected as "indicator chemicals" in the RI Public Health Evaluation. Indicator chemicals are defined as chemical contaminants which are most likely to pose a threat to public health or the environment at a given site. Selection criteria for the determination of "indicator chemicals" is presented in the Public Health Evaluation section of the RI.

Geophysical

The geological characterization involved literature research as well as field studies. The literature search consisted of reviewing references and available maps. The field studies

Table 1

Surficial Soil Samples

Semi - Volatile Organics

Chemical	Maximum Concentration (ppb) On-site	Off-site	Background Concentration
phenol	410	BDL	BDL
1,4-dichlorobenzene	960 *	BDL	BDL
4-methylphenol	3400	BDL	BDL
di-n-butylphthalate	2000	BDL	BDL
bis(2-ethylhexyl)phthalate	20000 *	BDL	BDL
dieldrin	88	47	BDL
PCB (1254)[1]	650	BDL	BDL
PAHs (carcinogenic)[2]	6126 *	BDL	BDL

Volatile Organics

Chemical	Maximum Concentration (ppb) On-site	Off-site	Background Concentration
chlorobenzene	6 *	8	BDL
benzene	1 *	BDL	BDL
chloroform	72	4 *	BDL
ethylbenzene	82	BDL	BDL
toluene	770 *	BDL	BDL
4-methyl-2-pentanone	47 *	BDL	BDL
xylenes (total)	190 *	BDL	BDL
tetrachloroethene	1 *	BDL	BDL

Note

* - Estimated Value
BDL - Below Detection Limit
1 - Polychlorinated Biphenyls
2 - Polyaromatic Hydrocarbons (Type B1 - probable carcinogenic)

Table 1 (continued)

Inorganics

Maximum Concentrations (ppm)

Chemical	On-site	Off-site	Background Concentration (ppm)
arsenic	16 *	15 *	2.5
beryllium	6.3 *	4.8	2.1
cadmium	2.1	2.8	BDL
copper	216	46	15
lead	96000	248 *	25
mercury	0.23 *	0.15	BDL
nickel	3580 *	199 *	39
thallium	3.7	2.4 *	0.7
chromium	1580 *	109 *	16
zinc	472	217	117
barium	164 *	213 *	81
manganese	2830	5070	2770

NOTE

* - Estimated Value
BDL - Below Detection Limit

included a seismic refraction survey, borehole geophysical survey, construction of monitoring wells, and the study of air photos in the preparation of a fracture trace analysis. The geologic investigation was performed to gain an understanding of subsurface conditions as they may influence contaminant migration. This was achieved by obtaining split-spoon samples of subsurface soil at various depths during the installation of on-site and off-site monitoring wells.

Samples from the borings were analyzed for EPA Target Compound List (TCL) compounds. Various volatile/semi-volatile organic compounds and inorganic contaminants were detected on the site and the immediate vicinity. Contaminants identified in subsurface soils and their maximum concentrations encountered are listed in Table 2. Again, only those contaminants which were selected as an "indicator chemical" are presented.

Ground Water/On-site Ponded Water

The fracture trace analysis of the site and the surrounding area revealed that the site is intercepted by several lineaments that strike approximately east/southeast near the southern boundary of the site. The resultant impact on ground water movement in this type of geology to some degree is unpredictable in relation to ground water flow patterns.

The hydrogeological study performed during the RI was supplemented by the geologic investigation. The locations of the monitoring wells were selected based on the results of the geophysical investigation and the fracture trace analysis. The wells were placed near the perimeter of the landfill and at upgradient and downgradient locations in the overburden and deep aquifers.

Samples of the ground water were obtained from these wells on two separate occasions during the RI (i.e., May 1988 and June 1988), as well as from residential wells in the area, for analysis of TCL compounds and other water quality indicators. Samples from the on-site ponded waters were also obtained and analyzed for the same chemical parameters and water quality indicators.

Numerous volatile/semi-volatile organic compounds and inorganic contaminants were detected in ground water samples collected from both monitoring and residential wells in and around the Dorney Road Landfill site. In addition, on-site ponded water samples collected also detected several volatile organic compounds and inorganic contaminants. Contaminants identified in the ground water and their maximum concentrations encountered in monitoring wells are listed in Table 3. Contaminants identified in residential wells and those identified in on-site ponded water samples are listed in Tables 4 and 5, respectively. As in Tables 1 and 2, only those contaminants which were selected as "indicator chemicals" are presented.

Table 2

Subsurface Soil Samples

Semi-Volatile Organics

Chemical	Maximum Concentration (ppb) On-site (natural)[1]	Off-site (shallow)
bis(2-ethylhexyl)phthalate	2400 *	1200
1,4-dichlorobenzene	69 *	BDL
di-n-butylphthalate	250 *	230 *
phenol	170 *	BDL
4-methylphenol	350 *	BDL
dieldrin	BDL	140 *
PAHs (carcinogenic)	124 *	8480 *

Volatile Organics

Chemical	Maximum Concentration (ppb) On-site (natural)[1]	Off-site (shallow)
benzene	2 *	BDL
chlorobenzene	2 *	4 *
chloroform	7 *	4 *
1,1-dichloroethane	7 *	BDL
ethylbenzene	96	BDL
tetrachloroethene	4 *	BDL
trichloroethene	2 *	BDL
styrene	3 *	BDL
4-methyl-2-pentanone	110	BDL
xylenes (total)	290	BDL
1,2-dichloroethene (total)	5 *	BDL
toluene	BDL	33

Note

* - Estimated Value
BDL - Below Detection Limit
1 - Underlying soil layer beneath landfill waste material

Table 2 (continued)

Inorganics

Chemical	Maximum Concentration (ppm) On-site (natural)[1]	Off-site (shallow)
arsenic	6.9	23 *
beryllium	33	2.6
cadmium	4.6	1.4
copper	26	38
lead	200 *	446 *
mercury	0.16 *	0.19
nickel	171	61
thallium	3.1	3.2
zinc	466 *	279
chromium	BDL	37
barium	BDL	101

Note

* - Estimated Value
BDL - Below Detection Limit
1 - Underlying soil layer beneath landfill waste material

Table 3

Monitoring Well Samples

Semi-Volatile Organics

Chemical	Maximum Concentration (ppb) On-site	Off-site	MCL(1)
bis(2-ethylhexyl)phthalate	50	33	-
1,4-dichlorobenzene	32 *	2 *	-
diethylphthalate	20	BDL	-
phenol	3200 *	25	-
4-methylphenol	2000 *	23	-

Volatile Organics

Chemical	Maximum Concentration (ppb) On-site	Off-site	MCL(1)
benzene	14	6	5
chlorobenzene	40 *	BDL	-
ethylbenzene	160	BDL	-
toluene	740	43	-
vinyl chloride	25	14	2
styrene	43 *	BDL	-
4-methyl-2-pentanone	490 *	BDL	-
xylenes (total)	530 *	BDL	-
1,2-dichloroethene (total)	79 *	180	-
1,1-dichloroethane	BDL	22	-
tetrachloroethene	BDL	37	-
1,1,1-trichloroethane	BDL	2 *	2
trichloroethene	BDL	51	5

Note

* - Estimated Value
BDL - Below Detection Limit

(1) - MCL (Maximum Contaminant Level): This is the maximum concentration allowed under the Safe Drinking Water Act (SDWA).

Table 3 (continued)

Inorganics (Total)

Chemicals	Maximum Concentration (ppb) On-site	Off-site	MCL(1)
cadmium	19	25 *	10
arsenic	140	8.9 *	50
chromium	72	30 *	50
copper	218	127	-
lead	11900	619 *	50
nickel	3540	800 *	-
thallium	18 *	54 *	-
zinc	37700	1470 *	-
barium	3480	1880 *	1000
manganese	420000	29200 *	-
beryllium	22	59 *	-
mercury	0.64	2.2	2

Note

(1) - MCL (Maximum Contaminant Level): This is the maximum concentration allowed under the Safe Drinking Water Act (SDWA).

Table 4

Residential Well Samples

Semi - Volatile Organics

Chemical	Maximum Concentration (ppb)	MCL(1)
bis(2-ethylhexyl)phthalate	2	-

Volatile Organics

Chemical	Maximum Concentration (ppb)	MCL(1)
1,1-dichloroethane	2	-
tetrachloroethene	6	-
trichloroethene	9	5
1,2-dichloroethene (total)	22	-

Inorganics

Chemical	Maximum Concentration (ppb)	MCL(1)
zinc	448	-
barium	32	1000
manganese	83	-

Note

(1) - MCL (Maximum Contaminant Level): This is the maximum concentration allowed under the Safe Drinking Water Act (SDWA).

Table 5

On-site Ponded Water

Volatile Organics

Chemicals	Maximum Concentration (ppb)	Background Concentration (ppb)
1,1-dichloroethane	9	BDL
ethylbenzene	3 *	BDL
toluene	8	BDL
1,1,1-trichloroethane	2 *	BDL

Inorganics

Chemicals	Maximum Concentration (ppb)	Background Concentration (ppb)
arsenic	1.7 *	BDL
chromium	9.2 *	5.1 *
lead	30	BDL
zinc	34	4.9 *
barium	580	1.8 *
manganese	31000	BDL

Note

* - Estimated Value
BDL - Below Detection Limit

Review of the data presented in Tables 1 through 5 detects the movement of some site specific contaminants off-site through an established contaminant pathway. As can be seen from this data, some site specific contaminants are leaching through the landfill, to the underlying natural soil layer, and then moving off-site by means of the ground water aquifer system.

Risk Assessment

Volatile/semi-volatile organic compounds and inorganic chemical parameters were detected in the various media at the site. The apparent source of contamination in the area is the waste buried and dumped on the soil at the Dorney Road Landfill Site. Although many of these contaminants have entered the ground water aquifer underlying the site, this Risk Assessment will only address the public health risk associated with dermal contact and incidental ingestion of landfill soil, solid waste, and on-site ponded waters. The risk associated with ground water will be addressed in a future ROD.

A quantitative risk characterization was performed on all of the chemicals detected in the various media at the site. A risk level of 10^{-6} representing an upper bound probability that one excess cancer case in 1,000,000 individuals for a period of 70 years, might result from exposure to potential carcinogens was used as a benchmark. This would be in addition to the approximate one chance in four of contracting cancer without any exposure to this site.

Based on the contaminant concentrations detected at the site and the many assumptions made throughout the Public Health Evaluation section of the RI report, the risks posed by the contaminated on-site solids and ponded waters through dermal contact and incidental ingestion by teenagers and adults are at or in excess of a 10^{-6} excess cancer risk for current use ($4x10^{-6}$ and $3x10^{-5}$ for teenagers and adults). Any chosen remedy must address reducing this risk.

Alternative Evaluation

Using information collected during the RI, a Feasibility Study (FS) was developed which describes and evaluates alternatives for remediating the sources of contamination at the Dorney Road Landfill site. Each alternative developed is designed to reduce the excess cancer risk associated with the landfill contaminants and also must satisfy the State requirement for the proper closure of municipal landfills. Each alternative was evaluated on the basis of how well it protects public health and the environment, its short-term and long-term effectiveness, how easy it is to implement, the extent to which it reduces the mobility, toxicity, or volume of contamination, its cost, and its overall feasibility. In addition, each alternative was evaluated to determine how well it meets existing regulatory requirements.

In developing cleanup options, numerous source control and mitigation control technologies were screened to provide a limited number of technologies applicable for remedial actions

at the site. Some of these technologies were removed from further consideration based on site-specific information and other comparative criteria. These other criteria's include:

* Technical performance/reliability
* Constructibility
* Health and Environmental impacts
* Institutional consideration

In the RI/FS report, each technology was evaluated not only in terms of theoretical feasibility, but also in terms of whether the technology is applicable to the site specific conditions. Various technologies were screened out before undergoing a detailed analysis. Those technologies that were dismissed and the justification for elimination are presented in Table 6. (An expanded discussion is in the RI/FS report).

The technologies that have been retained for further analysis can be grouped into the following five alternatives:

* Minimal/No Action
* Soil Cover
* Multi-Layer Cap
* On-Site RCRA Landfill
* On-Site Incineration

All of the alternatives evaluated include monitoring of air and on-site ponded waters before, during, and after cleanup activities. The costs for implementing each alternative include current estimates of construction, implementation, operations, and maintenance. A more indepth analysis of each alternative is presented in the RI/FS report. The following is a summary of the evaluation:

Alternative 1: Minimal/No-Action

The No-Action alternative is required by the National Contingency Plan (NCP) to be considered through the detailed analysis. This alternative is included in the RI/FS for comparison with the other alternatives under consideration. This alternative would be selected only if the site posed little or no risk to public health or the environment. Existing site security would be upgraded on the site to restrict pedestrian and animal traffic across the site. A long-term periodic ground water, air, pond water, and sediment monitoring program would also be instituted on a semiannual basis to determine the extent and severity of contaminant migration off the site.

The No-Action alternative does not meet SARA's mandate to be protective of human health and the environment. It also does not address the majority of the public health and environmental issues identified in the RI/FS and does not meet the State ARAR requiring proper landfill closure as defined in the Pennsylvania Solid Waste Management Act and requirements issued under the same.

Table 6

Summary of Eliminated Technologies

[Technology]	[Justification for Elimination]
Containment	
1. Asphalt Cap	Potential for cracking and incompatibility with site wastes.
2. Concrete Cap	Potential for cracking.
Disposal	
1. Off-site RCRA Landfill	On-site RCRA Landfill will perform the same function at much lower cost. Lack of available facilities in the area.
Treatment	
1. Soil Vapor Extraction	Implementation difficulties and limited effectiveness.
2. Vitrification	Landfill waste not compatible.
3. Biological Treatment	Implementability difficulties caused by multicontaminant environment.
4. Water or Solvent Leaching	Implementation difficulties.
5. Supercritical Fluid Extraction	Still in experimental stage.
6. Low-Temperature Thermal Aeration	Does not remove all organics. Does not address inorganics.
7. Oxidation/Reduction	Implementability difficulties caused by multicontaminant environment.

Table 6 (continued)

8. Ultrasonic/Ultraviolet Treatment	Unproven effectiveness.
9. Solidification and Fixation	Implementation difficulties.
10. Off-site Incineration	On-site thermal treatment performs the same function at significantly lower cost.
11. POTW Water Treatment	Difficulty in getting POTW to accept Superfund waste water.
12. On-site Water Treatment	RCRA facility treatment would be equally effective and less costly.
Ancillary Actions	
1. Active Vents	Passive vents should provide sufficient venting at lower cost.

The major components of this alternative include:

* Installation and maintenance of a chain link perimeter fence.

* Establishment of institutional controls (land use/deed notices).

* Performance of a site review every five years.

The only component of this alternative that involves implementation is the installation of the perimeter fence which could be installed within less than one year of the signing of the ROD.

The total estimated cost for implementing the No-Action alternative is $120,000 for capital costs (such as construction). The present worth (30 years at 5%) of operation and maintenance activities is equal to $640,000.

Alternative 2: Soil Cover

This alternative includes draining the ponds, regrading the landfill surface, and covering the entire landfill with 2 feet of compacted clean fill and 6 inches of topsoil. The soil cover would act as a physical barrier over the contaminated landfill solid material to reduce the risk of exposure to potential human and animal receptors by direct contact and incidental ingestion. Migration of contaminants to the ground water would not be significantly reduced.

The Soil Cover alternative would also include installation of a perimeter fence, deed notices, runon/runoff controls and surface water/ground water monitoring.

A soil cover does not reduce the toxicity or volume of the hazardous materials on-site, is not permanent, does not utilize an alternative treatment technology, and does not meet State ARAR requirements for landfill closure. Site contamination would remain in place.

Complete implementation of this alternative including pond water elimination, site grading, and soil cover construction, could be accomplished in approximately six months to one year.

The total estimated cost for implementing the Soil Cover alternative is $5,300,000 for capitals costs (such as installation of fence and regrading). The present worth (30 years at 5%) of operation and maintenance activities is equal to $1,600,000.

Alternative 3A: RCRA - Type Multi-Layer Cap

Installation of a multi-layer cap meeting the Resource Conservation Recovery Act (RCRA) standards would eliminate the direct contact risk (i.e., absorption and incidental ingestion of site contaminants) and would protect the environment by minimizing infiltration of

contaminants to ground water via percolating ponded water/rainwater.

The RCRA cap would include, from the bottom up, a 6-inch gravel gas collection layer, a two foot thick compacted clay layer, a 50 mil flexible synthetic liner, a synthetic drainage layer, a two foot layer of clean earth fill, and a one foot layer of topsoil to support vegetation. A cross section of the RCRA - Type Multi-Layer Cap is shown in Figure 3.

Some landfill materials would be excavated and placed in a central area for eventual capping. The excavated zones would be backfilled with clean soil. By consolidating landfill soils, the area to be capped would be limited, thereby reducing the total cost.

The RCRA-Type Multi-Layer Cap alternative does not reduce the volume or toxicity of the contaminated media. Direct contact with site contaminants and migration via percolating rain water are blocked. This alternative meets the State ARAR for proper landfill closure.

The total estimated cost for implementing the RCRA-Type Cap alternative is $13,000,000 for capital costs such as soil excavation and cap installation. The present worth (30 years at 5%) of operation and maintenance activities is equal to $1,800,000. Construction of the cap, including regrading the site and pond elimination, could be accomplished in about one year, following design.

Alternative 3B: PA - Type Multi-Layer Cap

This alternative has the same major component and is similar to Alternative 3A except that the standard for the cap design would be developed in accordance with the Pennsylvania Solid Waste Management Act rather that RCRA guidance. As RCRA closure standards are not applicable at this pre-RCRA site, and the Commonwealth of Pennsylvania has solid waste regulations in place which directly relate to this type of municipal landfill, these state requirements will be followed. Because this site contains hazardous contaminants, the RCRA cap requirements maybe considered relevant and appropriate. However, the Pennsylvania State Cap also meets this requirement.

The Pennsylvania State Cap would consist of, from the bottom up, a 6-inch gravel gas collection layer, a one foot compacted earth layer, a 50 mil flexible synthetic liner, a synthetic drainage layer and a two foot loam layer on top to support vegetation. A cross section of the Pennsylvania State Cap is shown in Figure 4.

Performance of this PA-Type Cap installation would be expected to be similar to the RCRA-Type Cap. Construction considerations would be the same as described for the RCRA-type cap. The total estimated cost for implementing the PA-Type Cap alternative is $12,000,000 for capital costs. The present worth (30 years at 5%) of operation and maintenance activities is equal to $1,800,000.

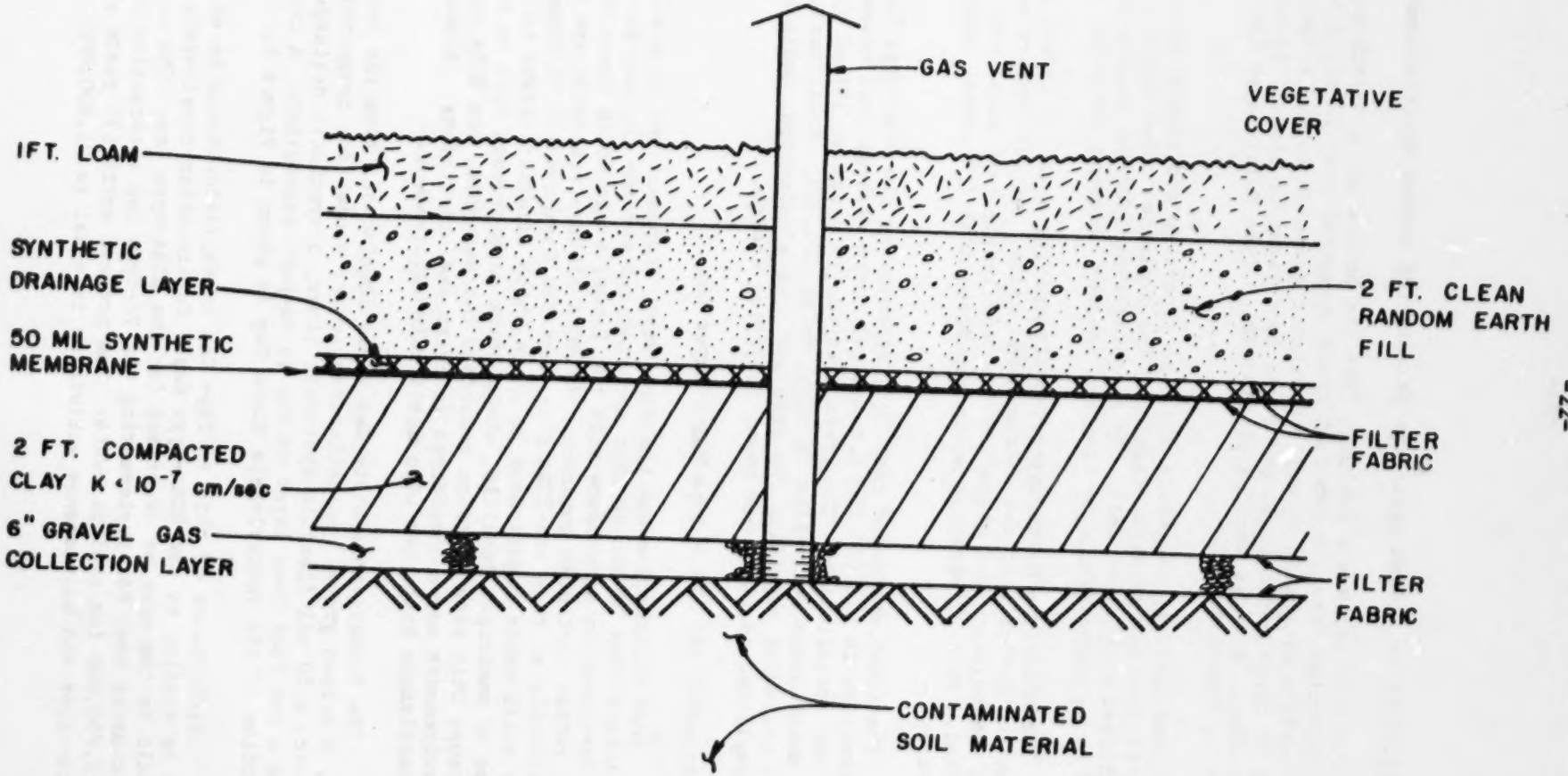

FIGURE 3
RCRA-TYPE MULTI-LAYER CAP

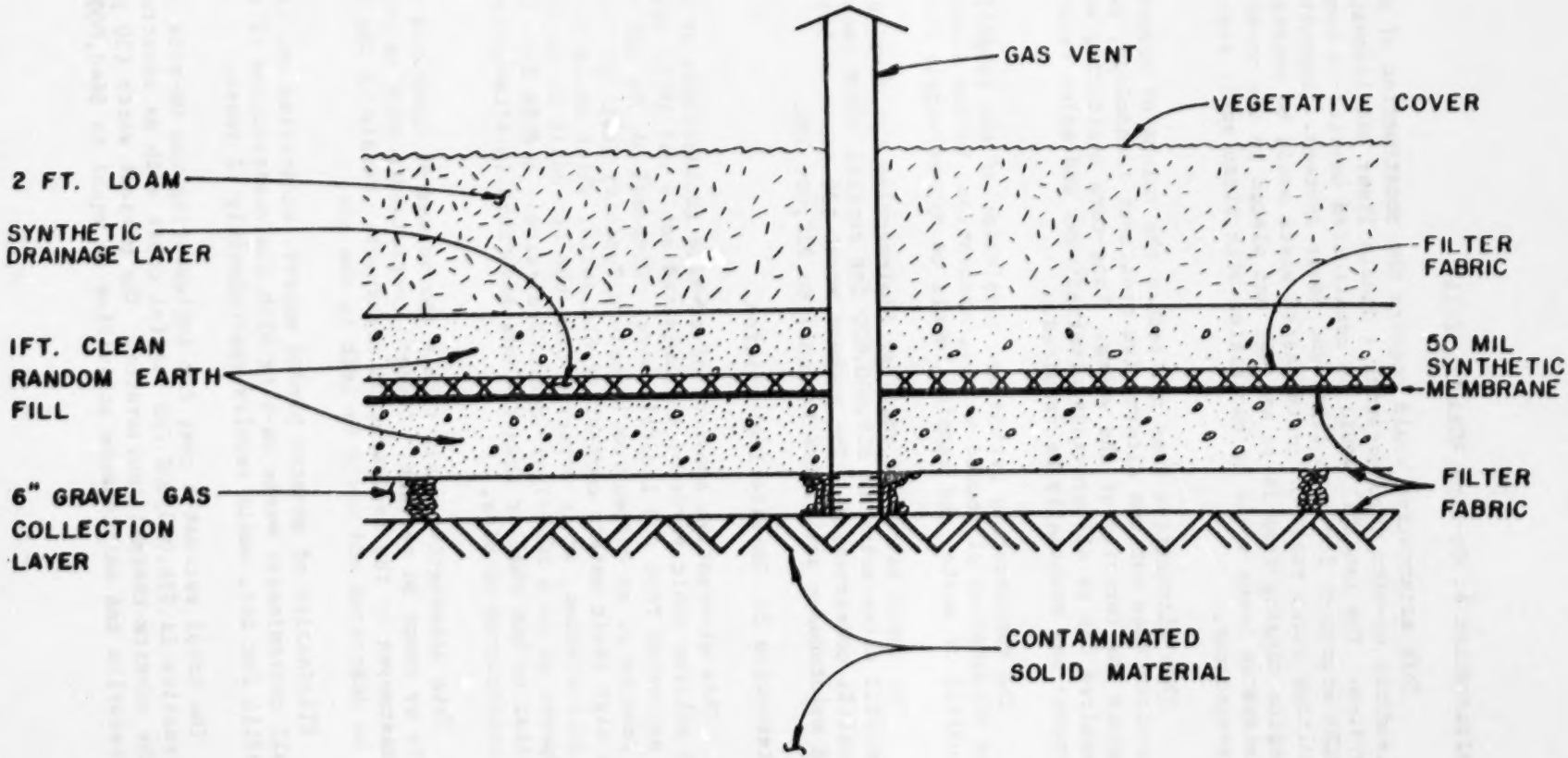

FIGURE 4
PA - TYPE MULTI-LAYER CAP

Alternative 4: On-site RCRA Landfill

This alternative would require the construction of a secure landfill on-site incorporating a double liner and leachate collection system. The landfill would be constructed on-site in compliance with RCRA standards for both liner and cover systems. Approximately 1.5 million cubic yards of contaminated waste would be excavated from depths ranging from 18 to 48 feet and placed in the on-site landfill. Excavated areas would be backfilled with clean soil, regraded and revegetated.

This alternative does not reduce the volume of hazardous materials on-site, does not use alternative treatment technology, and may not reduce the toxicity of the waste. Long-term monitoring would be required (as in all previous alternatives) and major repair or maintenance may eventually be required.

The construction period for completion of the landfill, including the elimination of ponded waters, excavation, bottom liner construction, backfill of waste, and capping, would be approximately five years.

The total estimated cost for implementing the On-site RCRA Landfill alternative is $19,000,000 for capital costs such as landfill construction. The present worth (30 years at 5%) of operation and maintenance activities is equal to $27,000,000.

Alternative 5: On-site Incineration

This alternative consists of on-site incineration of approximately 1.5 million cubic yards of contaminated soils and solid waste that would be excavated from the landfill site. Disposal of the ash would depend on results of an Extraction Procedure Toxicity Test (EP Tox). Due to the high toxic metals content of the soils, which would not be destroyed by incineration, it is expected that the ash would be required to be disposed of in a RCRA-Type Landfill on-site. A RCRA Type Landfill, similar to but smaller than the one described in Alternative 4, would be constructed on-site.

This alternative would reduce the volume of hazardous contaminated media by about 50 percent. Organic contaminants such as phenols would be destroyed by the incineration treatment. Metals in the soil would not be destroyed and would be left in the ash.

Elimination of on-site ponded waters, excavation and incineration of all contaminated waste on-site with the construction of a RCRA-type landfill for ash, would require approximately 12 years.

The total estimated cost for implementing the On-site Incineration alternative is $28,000,000 for capital costs such as construction of the on-site thermal incinerator. The present worth (30 years at 5%) of operation and maintenance activities is equal to $640,000,000.

Comparative Analysis

The five alternatives assembled were evaluated based on the following nine criteria:

* Overall protection of human health and the environment;
* Compliance with all federal and state applicable or relevant and appropriate requirements (ARARs);
* Reduction of toxicity, mobility or volume;
* Short-term effectiveness;
* Long-term effectiveness;
* Implementability;
* Cost;
* Community acceptance; and
* State acceptance.

A summary of the relative performance of the alternatives with respect to each of the nine criteria is presented in the following.

1. Overall Protection of Human Health and the Environment

The alternatives evaluated offer a wide range of overall protectiveness from almost no protection of human health or the environment to maximization of protection. Alternative 1 would provide minimal protection of human health and the environment. The current site related risks identified in the RI would be unmitigated. Alternative 2 would greatly reduce the risks of incidental ingestion and dermal absorption of contaminated surface water and solid waste by placing a clean soil cover over the site. The leaching of solid waste contaminants to ground water would not be significantly reduced by implementation of this alternative. Alternative 3A and 3B would offer the same protection of human health as Alternative 2, but with the increased reliability of a multi-layer cap. In addition, Alternative 3A and 3B would prevent infiltration of precipitation into the waste, thus reducing the leaching of contaminants to ground water. Implementation of Alternatives 1, 2, 3A and 3B would pose minimal short-term risks during construction. Alternative 4 would provide complete three-dimensional containment of the waste material, thus eliminating human health and environmental risks. Alternative 4 would require approximately five years to implement, during which time workers would be exposed to moderate health risks. Alternative 5 would afford maximum protection of both the environment and public health since all organic contaminants would be destroyed and the residual inorganic contaminants would be completely contained within a lined landfill on-site. However, implementation of this alternative would require about 12 years to complete, during which time site risks would not be fully mitigated and workers would be exposed to moderate health risks.

2. Compliance with ARARs

All alternatives would be designed to meet action-specific ARARs which would include State requirements for the proper closure of municipal landfills. No location-specific ARARs were found to be

applicable for any of the remedial actions considered. Chemical-specific ARARs were considered as they apply to air quality. Water quality chemical specific ARARs are not applicable because on-site ponded waters will not be discharged to a surface water, nor spray irrigated on adjacent lands or discharged to local drainage. For alternatives 2, 3A, 3B, 4 and 5, all pond waters will be transported off-site and disposed of at an approved facility. Contaminated pond waters migrating off-site during periods of precipitation in Alternative 1, would not meet water quality standards. Controls would be implemented during excavation in alternatives 2, 3A, 3B, 4 and 5 to reduce particulate and contaminant vapor concentrations in air to acceptable levels under State and Federal air quality requirements.

3. Reduction of Toxicity, Mobility, or Volume (TMV)

The TMV of site contaminants would be unaffected by implementation of Alternative 1. The containment alternatives (2, 3A, 3B and 4), do not utilize treatment to reduce TMV of the landfill materials. However, containment does effect the mobility of wastes by reducing infiltration, therefore minimizing leachate generation. Alternative 2 would provide little to moderate reduction of contaminant mobility. Alternative 3A and 3B would provide much greater reduction in contaminant mobility. These three alternatives would reduce the mobility of surface contaminants, while Alternatives 3A and 3B would also reduce the mobility of subsurface contaminants leaching to groundwater. Contaminants would be completely immobilized in Alternative 4, but toxicity and volume would be unaffected. Implementation of Alternative 5 would destroy all organic contaminants, while residual inorganic contaminants would be immobilized within a lined landfill.

4. Short-Term Effectiveness

Potential risks to the local population should not increase during implementation of any of the remedial alternatives since there are no residents living within 1,000 ft. of the site. Excavation of the contaminated waste during construction of Alternatives 4 and 5 would, however, pose low exposure risks due to inhalation of organic vapors or fugitive dust for travelers on Dorney Road. Migratory waterfowl and other wildlife currently residing near the site would be temporarily displaced during construction of all alternatives, except Alternative 1.

Workers responsible for implementing the remedial actions may be exposed to risks associated with dermal contract, incidental ingestion, and inhalation of organic vapors or fugitive dust during construction. These risks would be extremely low for implementation of Alternative 1 since work would be performed at the site perimeter and the construction period would be brief (less than one month). Implementation of Alternative 2 and 3A/3B could pose low to moderate risks to workers since the contaminated surface soils and waste would be disturbed during regrading. The duration of the construction period for Alternatives 2 and 3A/3B would, however, be less than one year. Implementation of Alternatives 4 and 5 would present moderate risks to workers due to the extensive excavation and handling of

contaminated waste required and the relatively long construction period (approximately 5 years for Alternative 4 and 12 years for Alternative 5). Standard safety and health practices used in the Hazardous Materials Handling Field Plan, would provide adequate protection for both the workers and travelers on Dorney Road. These practices can be easily implemented for each alternative.

5. Long-Term Effectiveness

Alternative 1 would provide minimal reduction of the identified, existing risks by limiting access of hunters and other site trespassers and deterring future use of the site. Monitoring of pond and ground water would indicate the need for subsequent action. The reliability of the site fence is relatively high, but is dependent upon continued inspection and maintenance, while enforcement of deed restrictions would be difficult to ensure. Monitoring technologies are well developed and reliable, but only indicate the presence of a problem rather that performing a protective function.

Alternatives 2, 3A and 3B should be equally effective in reducing the risks of dermal contact and incidental ingestion of contaminated soil, solid waste, and ponded water. Alternative 2 would not be protective of ground water, while Alternatives 3A and 3B would reduce infiltration and the associated leaching of solid waste contaminants to the water table. The reliability of the soil cover in Alternative 2 is considerably less than that afforded by the multi-layer caps of Alternatives 3A and 3B. Of the RCRA and PA-type caps, the RCRA cap offers slightly greater reliability since a clay liner layer is employed in addition to the synthetic liner. Continued maintenance for alternatives 2, 3A, or 3B would be required to ensure effectiveness of these alternatives.

Alternative 4 and 5 would provide maximum protectiveness as they eliminate both exposure risks and leaching of contaminants to ground water. Properly constructed, a lined landfill should be very reliable; however, the reliability is dependent upon continued maintenance and monitoring. All organic contaminants would be destroyed in Alternative 5, thus minimizing the potential for future risks from organics.

6. Implementability

Implementability of Alternative 1 would be extremely simple, requiring only the construction of a fence around the site and periodic monitoring of existing wells and pond water. Implementation of Alternative 2 should also prove relatively easy as the civil construction techniques required are well developed and commonly used. Alternatives 3A and 3B would be somewhat more difficult to implement due to the complex construction of the multi-layer cap. Multi-layer cap construction, however, is well developed and should not pose a major problem with adequate engineering design. Implementation of Alternatives 4 and 5 would be extremely difficult due to the volume (approximately 1.5 million cubic yards) of contaminated waste to be handled and the necessity for staged construction with simultaneous

excavation and liner construction. Operations and coordination of the incinerator with excavation and backfilling of the waste would increase the complexity of the engineering design and site work for Alternative 5. Implementation of Alternative 4 and 5 would require complex design and construction techniques.

7. Cost

The total capital cost, annual operation and maintenance cost (O&M), and total present worth costs for all alternatives are summarized and presented below.

Alternative	Total Capital Cost	Annual O&M	Total Present Worth
1	$ 120,000	$ 39,000	$ 760,000
2	5,300,000	42,000	6,900,000
3A	13,000,000	42,000	15,000,000
3B	12,000,000	42,000	14,000,000
4	19,000,000	5,887,000	46,000,000
5	28,000,000	72,247,000	670,000,000

8. Community Acceptance

A public meeting for the Proposed Remedy was held on August 31, 1988, in Upper Macungie Township, Pennsylvania. The meeting was attended by 15 Township residents and questions were received by those present. Township residents had no objection to the selected remedial alternative which was presented in the Public Notice and in the Proposed Plan prior to the public meeting. The responsiveness summary attached to this Record of Decision (ROD) summarizes the public meeting and answers those questions/concerns that were received during the public comment period.

9. State Acceptance

The Commonwealth of Pennsylvania has reviewed the RI/FS and this ROD and concurs with the Selected Alternative.

Selected Remedy

Based on available data and analysis conducted to date, Alternative 3B is selected as the most appropriate remedy for meeting the goals of the initial operable unit at the Dorney Road Landfill site. This alternative consists of:

* Perimeter Fence
* Deed Notice
* Elimination of On-site Ponded Waters
* Regrading
* Runon/Runoff Controls
* PA - Type Multi-Layer Cap
* Runoff Monitoring
* Ground Water Monitoring

This action is an operable unit measure to control contaminant migration off-site by containment of contaminated landfill soil and waste material, thereby preventing dermal contact and incidental ingestion of these materials. It will also prevent the continued leaching of precipitation and pond waters through the contaminated landfill media, which in turn will isolate the source of ground water contamination. This alternative will also not be inconsistent with a final remedial action for this site. A summary of each of the individual major components of this selected remedy is described in the following:

- Perimeter Fence: A chain link fence will be constructed around the site perimeter to reduce pedestrian and animal traffic across the site. Approximately 6,600 linear feet of fence would be erected to enclose the entire area of concern.

- Deed Notice: A notice will be placed in the deed of the land within the site boundaries.

- On-site Ponded Water Elimination: The five existing on-site ponds must be eliminated to allow proper construction of the landfill cap. A total of approximately 700,000 gallons of water are contained in two ponds located in the southwest portion of the site and three smaller ponds located in the north-central and northwest portions. All on-site ponded waters will be transported off-site and disposed of at an approved facility.

- Regrading: Regrading is required to provide positive drainage across the site, preventing the retention of surface water. Soil will be cut from high areas on-site and used to fill low areas which will include the filling of drained pond areas.

- Runon/Runoff Controls: A dike and diversion ditch system will be constructed around the site to eliminate site runon and to divert precipitation to two sedimentation ponds, located to the north and the other to the south of the site.

- PA-Type Multi-Layer Cap: The landfill cap will consist of a one foot thick compacted earth base course, a 50 mil flexible synthetic liner, a synthetic drainage layer, and a two foot thick vegetative loam layer. A gas collection system consisting of a 6-inch thick gravel layer and well type vents will also be

included beneath the compacted earth base course.

- Runoff Monitoring: Surface water and sediment which will drain from site at the northeast and southeast corners, will be collected and analyzed for a select list of chemical contaminants on a scheduled basis.

- Ground Water Monitoring: Ground water will be monitored both upgradient and downgradient of the site for a period of 30 years to detect any changes in ground water quality due to leaching of landfill contaminants. Sampling of monitoring wells will take place on a periodic basis and will be analyzed for a select list of chemical contaminants.

Statutory Findings

The selected remedy meets statutory mandates for utilizing permanent solutions and alternative treatment technologies to the maximum extent practicable.

Treatment of the principal threats of the site was not found to be practicable, therefore this remedy does not satisfy the statutory preference for treatment as a principal element of the remedy. Treatment was deemed impracticable at this site due to the volume and multi contaminated nature of the landfill material, and the uniformity of site contaminants.

Applicable or relevant and appropriate requirements (ARARs) pertaining to this remedy will be attained. These ARARs include:

- Chemical

  - Clean Air Act: National Air Quality Standards (NAQS), 40 CFR Part 50

- Location

  - No location specific ARARs have been identified.

- Action

  - Pennsylvania Solid Waste Management Act, Act of July 7, 1980, P.L. 380, 35 P.S. Chapters 691.1 et. seq. and requirements issued under the Pennsylvania Solid Waste Management Act

  - Pennsylvania Air Pollution Control Act, Act of January 8, 1960, P.L. 2119, 35 P.S. Chapters 4001 et. seq. and requirements issued under the Pennsylvania Air Pollution Control Act

  - Clean Water Act, Pretreatment Requirements, 40 CFR Part 403

The selected remedy is cost-effective as it provides the best balance between cost and effectiveness in comparison with the other alternatives. Alternative 3B is protective of human health and the environment and will be easier to implement that alternatives 4 and 5. Unlike alternative 2, alternative 3B will reduce the migration of contaminants to ground water, and has a considerable cost savings when compared to Alternative 3A.

Schedule

The anticipated schedule is for the remedial design to begin in the Winter of 1988 or early 1989. Once the landfill cap design is completed, implementation of the design will require a construction period of approximately one year.

Enforcement Status

Operations as a municipal and industrial landfill at an abandoned iron mine pit have caused contamination of the soil and ground water at the site. An RI/FS for the soil contamination was completed in June, 1988.

In a letter dated September 2, 1988, EPA gave the Potential Responsible Parties (PRP) notice of their potential liability with regard to implementation of the first operable unit remedial action. Enclosed with this letter was a copy of EPA's proposed remedial alternative. The PRP's were extended the opportunity to present a good faith proposal to conduct the Remedial Design and Remedial Action to the agency within sixty (60) days of receipt of the September 2, 1988, special notice letter.

Prepared by: Terry Stilman
Hazardous Waste Enforcement Branch

FINAL RESPONSIVENESS SUMMARY

FOR THE

DORNEY ROAD LANDFILL SITE

LEHIGH COUNTY, PENNSYLVANIA

From August 16, 1988 through September 14, 1988, the U.S. Environmental Protection Agency (EPA) and Pennsylvania Department of Environmental Resources (PADER), held a public comment period on the Proposed Plan and Remedial Investigation/Feasibility Study (RI/FS) for the Dorney Road Landfill Superfund site in Upper Macungie Township, Lehigh County, Pennsylvania. On August 31, 1988, EPA and PADER co-sponsored a public meeting to receive comments from the public on the Proposed Plan and RI/FS. The RI/FS and other information utilized by the EPA and PADER to select a preferred remedial alternative is available to the public at the information repositories at the Upper Macungie Township Building in Breinigsville or the Parkland Community Library in Allentown.

The purpose of this responsiveness summary is to summarize comments received on these documents, as expressed by residents and local officials, during the public comment period and to provide EPA and PADER's responses to the comments. Comments submitted to EPA and PADER during the public comment period are included in this summary.

SITE BACKGROUND

The Dorney Road Landfill site (also called Oswald's Landfill) is located along the southwest boundary of Upper Macungie Township in Lehigh County, Pennsylvania, approximately eight miles southwest of the City of Allentown. The site is composed of approximately 27 acres and is bounded to the east by Dorney Road and extends westward into Longswamp Township, Berks County. The site is surrounded by agricultural land where corn is grown for dairy and beef industries. The site is referred to locally as Oswald's Landfill because it was leased and operated from 1970 to 1978 by Harold Oswald.

According to site records, initially the site was operated as an open pit iron mine. Between 1952 and 1966, however, the site was operated as an open dump with waste disposed in the abandoned iron mine pit. From 1970 to December 1978, the Dorney Road Landfill was operated primarily as a municipal waste dump. During this time, industrial waste disposal was documented. A Sanitary Landfill Survey report, prepared in 1970 by PADER, maps an area of the landfill designated for disposal of waste sludges from the General Electric Allentown plant. During operations, the facility was cited by the State for illegal dumping practices. Although Oswald initiated a permit application for operation of the landfill, he never completed the application and subsequently never received a permit. Oswald ceased operation of the landfill in 1978.

The site was not properly prepared for closure and was not regraded or seeded. In late 1982, PADER representatives collected surface water and ground-water samples from the site. High levels of lead were detected in the surface water samples and phenols were detected in the ground-water samples. In January 1983, PADER sampled residential wells and surface soils on the site. No adverse impacts to the ground water were identified in the well samples but elevated levels of lead were detected in soil samples collected at the site. In 1983, the State requested that the site be included on the National Priorities List. The NPL is a list of hazardous waste sites across the country eligible to receive Federal Superfund monies for cleanup. In response to the NPL listing request, EPA initiated sampling at the site. In April 1983, EPA contractors visited the site and monitored air quality but did not detect any readings above levels that are considered harmful to human health or the environment. The site was proposed for inclusion on the National Priorities List (NPL) in September 1983. Sampling of soil, sediments, and surface water, conducted in April 1984 by EPA contractors, detected elevated levels of metals, phenols, and toluene in the samples. Responding to a May 1986 removal request by the State, EPA's Environmental Response Cleanup Service (ERCS) regraded the surface, seeded the site, and installed earthen berms to control migration of surface contaminants onto neighboring property in June 1986.

SUMMARY OF MAJOR COMMENTS AND EPA RESPONSES

During the public comment period on the RI/FS and Proposed Plan, EPA and PADER co-sponsored a public hearing at the Upper Macungie Township Building on

August 31, 1988 at 7:00 p.m. to discuss the proposed plan for cleaning up contamination at the landfill. Those attending the meeting included representatives from EPA, PADER, consultants to EPA and PADER, an area news reporter, and approximately 15 community residents. During the meeting, the consultants summarized the results of investigations conducted at the site and reviewed the cleanup alternatives evaluated in the FS report. The PADER representatives described how the Superfund cleanup program works and explained EPA's and PADER's preferred alternative for addressing contamination at the Dorney Road Landfill site. They explained that the RI/FS report and the proposed alternative address the initial phase, or Operable Unit, of cleanup at the site. The first Operable Unit is directed at limiting human contact with soils and waste from the site. PADER also explained that ground-water contamination will be addressed in a supplemental report which currently is being prepared. This second phase of the study is referred to as the second Operable Unit. A public meeting, planned for February, will provide citizens with an opportunity to discuss issues related to site ground-water contamination.

Questions, comments, and concerns received during the August 1988 meeting are summarized below and are categorized into the following topics: 1) scope and findings of the Remedial Investigation; 2) proposed remedy; 3) residential well testing; and 4) potentially responsible parties. Each comment is followed by the response provided by EPA and/or PADER. The purpose of this document is to summarize the public's concerns and EPA and PADER's responses, however, the official transcript of the meeting contains a complete account of the questions and responses. A copy of the transcript is available to the

public at the site information repositories. Additionally, one letter was received by EPA during the public comment period. The written comments and PADER responses are included in this summary.

SCOPE AND FINDINGS OF THE REMEDIAL INVESTIGATION

Comment: A resident asked if any determination had been made of what had killed several walnut trees on the Wessner property bordering the landfill and if it was caused by contamination in the ground-water.

Response: A PADER consultant explained that the dead vegetation in the area is probably related to surface contamination rather than ground-water contamination.

Comment: A resident explained that his water supply had a water quality problem and asked if the RI study had included an assessment of the water quality in the Terry Hill area.

Response: A PADER consultant responded that the water system that affects the landfill does not extend to the area that the resident described. He explained that the water north of Terry Hill is affected by a different system and, because it was unlikely that contamination from the landfill would extend to that area, it was not included in the scope of the study.

Comment: A resident asked what contaminants were identified at the site and at what concentrations they were found.

Response: An EPA representative said that the contaminants identified at the site included volatile organic compounds (VOCs), polyaromatic hydrocarbons (PAHs), and inorganics such as lead. The PAHs were present in concentrations that pose a threat to human health. A VOC, trichlorethylene, was found in a nearby residential well but not in on-site ground-water samples. Lead also was identified at the site but not in residential wells.

Comment: One resident stated her belief that the geology of the area is prone to sinkholes and claimed that testimony offered at a hearing in 1979 indicated that there were sinkholes on the site that had been filled. (Note: The 1979 hearing was held by the State to review a permit application to reopen the landfill. The permit was denied because of the public reaction to the dangers posed by sinkholes that had been identified in the neighboring area.)

Response: A PADER consultant explained that seismic mapping of the site during the RI did not indicate the presence of sinkholes on the site and no sinkholes were identified within one quarter mile of the site boundary.

PROPOSED REMEDY

Comment: A resident asked what the remedy would look like and another resident asked how far the cap would extend beyond the contaminated soil and if it would help prevent the leachate from migrating onto neighboring property. The written comment stated concern over encroachment of leachate from the landfill onto the Bauer-Wessner property.

Response: A PADER consultant responded that the cap will consist of a foundation made up of one foot of compacted soil, two layers of fabric filter material interspersed by a liner and synthetic drainage layer, followed by one foot of soil and a two foot loam layer that would be vegetated. A gas collection system and vents also would be included beneath the foundation base. Specific design components of the remedy are not complete because it must be formally approved by EPA first. Generally, however, the cap extends into clean material. It is expected that the cap will help prevent the off-site migration of leachate by drying up the material beneath it.

PADER's response to the written comment stated that the Department has no knowledge of landfill waste encroachment into the farm fields. They also asked the commentor to specifically indicate the areas of concern.

Comment: A resident asked if top soil used in constructing the cap would come from the site.

Response: A PADER representative explained that the soil used in constructing the layers would be clean soil brought onto the site. It would not be taken from on-site.

Comment: A citizen inquired about the durability of the cap and several residents asked about the success of such caps where they are currently in use, where and when a cap was most recently installed, and whether these caps had been used to close toxic dumps.

Response: A PADER representative stated that the layers created during the placement of the cap have enough flexibility to withstand heavy equipment used during installation. The materials used for caps have been used successfully as caps and liners at toxic waste sites. The nearest landfills where similar materials are used include Pottsdown and Rose Landfills in Bucks County, Pennsylvania.

Question: One citizen asked how rainwater run-off would be controlled once the cap was in place. The written comment expressed concern over the height of the landfill after the cap is installed, stating that the volume and force of water runoff will erode the Bauer-Wessner land.

Response: A PADER consultant said that the water would be diverted into ponds constructed on the site designed to contain water from a 24 hour, 25 year rain storm. This measure is used to estimate the capacity needed to protect the surrounding area from run-off during a worst case storm.

PADER responded to the written comment by explaining that runoff controls, designed to prevent surface water from leaving the site, would be installed along with the cap. The runoff controls will discharge into the ponds described earlier.

Comment: A resident asked how often the wells that were installed for sampling during the investigation would be monitored, if they would continue to be monitored after the cap was installed, and if the wells are being

monitored currently. Another citizen asked if all the wells were installed at a uniform depth.

Response: A PADER representative responded that samples are not being collected currently from the monitoring wells. However, the well monitoring program that is part of the proposed remedy includes monitoring a total of four wells, two times each year. The well network used for the investigation extends to a maximum depth of just over 100 feet. The ground-water samples were collected from an interval that extended from five feet above the water table to just over 100 feet in depth. This large of an interval was used because some of the contaminants of concern would be found along the top of the ground water, if they were present, and others would sink.

Comment: In the letter submitted to PADER, the commentor stated that the Bauer-Wessner property owners are reluctant to give license for the use of the monitoring wells on the property over a period of 20 to 30 years.

Response: PADER responded to the written comment that EPA will be administering the cleanup operations beyond the Remedial Design. Consequently, the commentor should make their position known to EPA.

Comment: A resident asked if the monitoring well sampling would pick up any indication of sinkhole formation.

Response: A PADER representative explained that the monitoring wells only detect changes in water quality. The sampling would detect contaminants

reaching the water table and becoming mobile through the ground water. If a sinkhole were to form rapidly, this would not be picked up by the monitoring wells but would be noticed visually.

Comment: Another resident asked if there would be lateral migration of water from the surrounding field through the cap.

Response: A PADER consultant said that there may be minor ground-water lateral migration but the edge of that cap is covered sufficiently to intercept water migrating under the cap.

Comment: A resident living near the site asked how methane gas is generated, if it has a scent, and why it has to be vented.

Response: A PADER representative described methane gas as odorless, colorless, and flamable. Methane is generated through the natural decomposition of waste material located under the cap. It should be vented because it could build up sufficiently to lift the cap or migrate laterally and pose a threat to neighboring homes.

Comment: A resident asked when construction of the cap was expected to begin.

Response: A PADER representative estimated that after the public comments are considered and a Record of Decision is signed, the cap construction could begin by the Spring of 1990. Cap implantation would take less than one year once construction begins.

RESIDENTIAL WELL TESTING

Comment: Several citizens asked how many residential wells were tested during the course of the site investigation and if residents living near the landfill could have their drinking water wells tested.

Response: A PADER representative said that a total of seven residential wells were tested during the RI. He explained that the RI for the first Operable Unit relates to preventing the spread of contaminants. The next study will address ground-water contamination and this question can be considered then. A public meeting on the results of the supplementary study on ground water is planned for February 1989.

POTENTIALLY RESPONSIBLE PARTIES

Comment: One commenter asked if the former landfill owners or operators had been identified or contacted to help with the cleanup of the site.

Response: A PADER representative stated that EPA is in the process of identifying and contacting parties responsible for the contamination at the site. These individuals or companies are referred to as potentially responsible parties (PRP). EPA will send out notice letters to the PRPs informing them of the cleanup actions that will be conducted at the site.

Comment: The citizen also asked if the amount of money spent on the remedy would be affected by whether or not money is recovered from the responsible parties.

Reponse: A PADER representative explained that the amount of money spent on the multi-layer cap remedy would not be affected by the results of EPA's cost recovery. Once the alternative is chosen, EPA issues a Record of Decision which dictates which remedy is to be implemented at the site.

DORNEY ROAD LANDFILL SITE
ADMINISTRATIVE RECORD *
INDEX OF DOCUMENTS

SITE IDENTIFICATION
Preliminary Assessment and Site Inspection Reports

1) Site Inspection Report, 6/19/80. P. 1-10.

2) Identification and Preliminary Assessment, 7/28/80. P. 11-14.

* Administrative Record available 7/8/88, update 9/27/88.

Note: Company or organizational affiliation is identified in the index only when it appears in the record.

REMEDIAL ENFORCEMENT PLANNING
Potentially Responsible Party - Correspondence

1) Letter from Mr. Dwight D. Worley re: Pennsylvania Department of Environmental Resources (DER) and EPA consideration to investigate and take action at Dorney Road Site, 5/8/85. P. 1-3. A list of Potentially Responsible Parties is attached.

Correspondence by Potentially Responsible Party

1) Letter to Mr. Dwight D. Worley, Pennsylvania Department of Environmental Resources, from Mr. Daniel G. Dellicker, East Penn Manufacturing Co., re: request for a copy of the Draft Work Plan, 5/15/85. P. 1-1.

2) Letter to Mr. Dwight D. Worley from Mr. T. M. Armstrong, General Electric, re: participating in the implementation of the Remedial Investigation/ Feasibility Study, 5/16/85. P. 2-2.

3) Letter to Mr. Dwight D. Worley, Pennsylvania Department of Environmental Resources, from Mr. T. M. Armstrong, General Electric, re: requesting an extension to June 26, 1985 to respond to the Draft Work Plan, 6/13/85. P. 3-3.

4) Letter to Mr. Dwight D. Worley, Pennsylvania Department of Environmental Resources, from Mr. Donald A. Wojton, East Penn Manufacturing Co., re: participating in the implementation of the Remedial Investigation/ Feasibility Study, 6/20/85. P. 4-4.

5) Letter to Reichard-Coulston, Inc. from Mr. Dwight D. Worley re: DER and EPA consideration to investigate and take action at Dorney Road Site, 10/22/85. P. 5-6.

6) Letter to Glidden Coatings and Resins from Mr. Dwight D. Worley re: DER and EPA consideration to investigate and take action at Dorney Road Site, 10/22/85. P. 7-8.

REMEDIAL RESPONSE PLANNING

Work Plans

1) Report: Draft Remedial Action Master Plan (RAMP) for the Dorney Road Site, prepared by Ecology and Environment, Inc., 12/84. P. 1-43a. References are listed on P. 43-43a.

2) Report: Remedial Investigation/Feasibility Study of Dorney Road Site (aka Oswald's Landfill), Final Draftwork Plan, prepared by Ecology and Environment, Inc., 12/84. P. 44-90.

3) Report: Draft Site Operations Plan, Dorney Road Landfill Remedial Investigation/Feasibility Study, Upper Macungie Township, Lehigh County, Pennsylvania (no author cited), 10/2/87. P. 90a-227.

4) Letter to Mr. Tim Alexander, Pennsylvania Department of Environmental Resources, from Mr. Earl H. Brown, Jr., ICF/SRW Associates, re: transmittal of the addendum to the October 2, 1987 Dorney Road Operations Plan, 12/16/87. P. 228-272. The addendum is attached.

5) Report: Final Quality Assurance Project Plan, Remedial Investigation/ Feasibility Study, prepared by ICF/SRW Associates, 1/27/88. P. 272a-457.

Remedial Investigation/Feasibility Study Reports

1) Report: Final Remedial Investigation Report, Volume 1 of 2, Dorney Road Landfill, Lehigh County, Pennsylvania, prepared by ICF Technology Incorporated, 8/11/88. P. 1-313. References are listed on P. 308-313.

2) Report: Final Remedial Investigation Report, Volume 2 of 2, Dorney Road Landfill, Lehigh County, Pennsylvania, prepared by ICF Technology Incorporated, 8/11/88. P. 314-647.

Correspondence and Supporting Documentation

1) Letter from Mr. Dwight D. Worley, Pennsylvania Department of Environmental Resources, re: soliciting qualifications and proposals from firms interested in providing engineering services to conduct a Remedial Investigation and Feasibility Study, 3/26/86. P. 1-1.

2) Letter to Mr. C. Kutz from Mr. Timothy A. Alexander, Pennsylvania Department of Environmental Resources, re: water sample results, 7/6/88. P. 2-3.

3) Letter to Mr. Henry Shade from Mr. Timothy A. Alexander, Pennsylvania Department of Environmental Resources, re: well water sample results, 7/6/88. P. 4-5.

4) Letter to Mr. Vern Shade from Mr. Timothy A. Alexander, Pennsylvania Department of Environmental Resources, re: water sample results, 7/6/88. P. 6-7.

5) Letter to Mr. Edgar Moth from Mr. Timothy A. Alexander, Pennsylvania Department of Environmental Resources, re: well water sample results, 7/6/88. P. 8-10.

6) Letter to Mr. Bill Dorney from Mr. Timothy A. Alexander, Pennsylvania Department of Environmental Resources, re: water sample results, 7/6/88. P. 11-12.

7) Letter to Mr. C. Fenstermaker from Mr. Timothy A. Alexander, Pennsylvania Department of Environmental Resources, re: well water sample results, 7/7/88. P. 13-15. The sample results are attached.

8) Letter to Mr. Tim Alexander, Pennsylvania Department of Environmental Resources, from Mr. Earl H. Brown, ICF/SRW Associates, Inc., re: transmittal of a memorandum presenting a brief discussion of the analytical results from the second groundwater sampling period, 9/7/88. P. 16-23. The memorandum is attached.

COMMUNITY INVOLVEMENT

Community Relations Plans

1) Report: Community Relations Plan, Dorney Road Site (Oswald's Landfill), Upper Macungie Township, Lehigh County, Pennsylvania (no author cited), (undated). P. 1-8.

2) Report: The Citizens' Guidance Manual For The Technical Assistance Grant Program, prepared by the U.S. EPA, 6/88. P. 9-327.

Fact Sheets, Press Releases, Public Notices

1) Fact Sheets re: Dorney Road Site (aka Oswald's Landfill), (undated) P. 1-1.

2) Public Notice: Pennsylvania Department of Environmental Resources Seeks Comments on the Dorney Road Landfill Superfund Site, 8/16/88. P. 2-2.

3) Superfund Program Fact Sheet re: Proposed Plan, Dorney Road Landfill, Upper Macungie Township, PA, (undated). P. 3-11.

Meeting Summaries, Trip Reports, Correspondence with Public

1) Public meeting agenda, 3/19/85. P. 1-2. A list of attendees is attached.

2) Transcript of public meeting, 8/8/88. P. 3-110.

GENERAL GUIDANCE DOCUMENTS *

1) "Promulgation of Sites from Updates 1-4," Federal Register, dated 6/10/86.

2) "Proposal of Update 4," Federal Register, dated 9/18/85.

3) Memorandum to U. S. EPA from Mr. Gene Lucero regarding community relations at Superfund Enforcement sites, dated 8/28/85.

4) Groundwater Contamination and Protection, undated by Mr. Donald V. Feliciano on 8/28/85.

5) Memorandum to Toxic Waste Management Division Directors Regions I-X from Mr. William Hedeman and Mr. Gene Lucero re: Policy on Floodplains and Wetlands Assessments for CERCLA Actions, 8/6/85.

6) Guidance on Remedial Investigations under CERCLA, dated 6/85.

7) Guidance on Feasibility Studies under CERCLA, dated 6/85.

8) "Proposal of Update 3," Federal Register, dated 4/10/85.

9) Memorandum to Mr. Jack McGraw entitled "Community Relations Activites at Superfund Sites - Interim Guidance," dated 3/22/85.

10) "Proposal of Update 2," Federal Register, dated 10/15/84

11) EPA Groundwater Protection Strategy, dated 9/84.

12) Memorandum to U.S. EPA from Mr. William Heckman, Jr. entitled "Transmittal at Superfund Removal Procedures - Revision 2," dated 8/20/84.

13) "Proposal of Update 1," Federal Register, dated 9/8/83.

14) Community Relations in Superfund: A Handbook (interim version), dated 9/83.

15) "Proposal of First National Priority List," Federal Register, dated 12/30/82.

16) "Expanded Eligibility List," Federal Register, dated 7/23/82.

17) "Interim Priorities List," Federal Register, dated 10/23/81.

18) Uncontrolled Hazardous Waste Site Ranking System: A User's Manual (undated).

19) Field Standard Operating Procedures - Air Surveillance (undated).

20) Field Standard Operating Procedures - Site Safety Plan (undated).

* Located in EPA Region III office.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
Post Office Box 2063
Harrisburg, Pennsylvania 17120

Deputy Secretary for
Environmental Protection

(717) 787-5028

September 29, 1988

Stephen R. Wassersug, Director
Hazardous Waste Management Division
EPA Region III
841 Chestnut Building
Philadelphia, PA 19107

Re: Letter of Concurrence
Dorney Road Superfund Site, Record Of Decision (ROD)

Dear Mr. Wassersug:

The Record of Decision declaration for the Dorney Road Superfund Site has been reviewed by the Department. The Record Of Decision details remedial actions developed for the initial landfill proper operable unit.

The major components of the selected remedy for the landfill proper include:

* Elimination of on-site ponded waters.
* Regrading.
* Pennsylvania-type multi-layer cap.
* Run-on/run-off controls.
* Groundwater monitoring.
* Perimeter fence.
* Deed notice.

I hereby concur with the EPA's proposed remedy with the following conditions:

* The Department will be given the opportunity to concur with decisions related to subsequent supplemental remedial investigations and studies to identify the extent of, and future potential for, groundwater contamination and remaining sources of that contamination, and evaluate appropriate remedial alternatives to assure compliance with DER cleanup ARARs and design specific ARARs.

* EPA will assure that the Department is provided an opportunity to fully participate in any negotiations with responsible parties.

* The Department will reserve our right and responsibility to take independent enforcement actions pursuant to state and federal law.

* This concurrence with the selected remedial action is not intended to provide any assurances pursuant to SARA Section 104(c)(3).

Thank you for the opportunity to concur with this EPA Record of Decision. If you have any questions regarding this matter please do not hesitate to contact me.

Sincerely,

Mark M. McClellan
Deputy Secretary
Environmental Protection